

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A method for producing a biomimetic membrane (10), which comprises:

- a) depositing directly, on at least one of the principal faces of a plate A of a micro-machinable material, a layer B comprising one or several strata each formed of a micro-machinable material,
- b) forming one or several through holes (20) within layer B, each hole having a wall (21) formed of the material(s) of said layer B and a bottom (22) formed of the material of plate A,
- c) depositing directly, on said layer B, the wall (21) and the bottom (22) of each hole, a layer C of a micro-machinable material, which closely hugs the wall and the bottom of said hole,
- d) completely eliminating layer C from the underlying face of layer B and, at the centre of each hole, from the underlying face of plate A, while at the same time leaving a residue (23) of layer C on the wall of said hole(s), said residue delimiting a pore (24), ~~in which~~ the wall (25) of which is formed of the material of layer C and ~~in which~~ the bottom (26) of which is formed of the material of plate A, and
- e) liberating at least the part of layer B in which are found one or several pores (24) formed in step d), by the partial or total elimination of plate A.

Claim 2 (Previously Presented): The method according to Claim 1, wherein layer B has a thickness of between around 5 nm and 5 μm .

Claim 3 (Previously Presented): The method according to Claim 1 or Claim 2, wherein the number of through holes (20) formed within layer B, is between 1 single hole and 100 million holes per mm² of surface area of layer B.

Claim 4 (Previously Presented): The method according to Claim 1, wherein the through hole(s) (20) formed in layer B are substantially cylindrical.

Claim 5 (Previously Presented): The method according to Claim 1, wherein the through hole(s) (20) formed in layer B are formed by a lithography followed by an etching, preferably dry etching.

Claim 6 (Previously Presented): The method according to Claim 1, wherein step d) comprises an anisotropic etching of layer C.

Claim 7 (Previously Presented): The method according to Claim 6, wherein the anisotropic etching of layer C is a reactive ion etching.

Claim 8 (Previously Presented): The method according to Claim 1, wherein step e) comprises the total elimination of plate A.

Claim 9 (Previously Presented): The method according to Claim 1, wherein step e) comprises the following steps: e₁) fastening, on the free face of layer B, a plate A' of a micro-machinable material, and e₂) hollowing out plates A and A' so as to liberate the part of layer B in which are found the pore(s), while at the same time leaving the edges of said plates as well as a part of their face opposite to that situated in contact with said layer B.

Claim 10 (Previously Presented): The method according to Claim 9, wherein plates A and A' are formed of the same material and are covered, on their face opposite to that situated in contact with layer B, with a layer D or micro-machinable material.

Claim 11 (Previously Presented): The method according to Claim 9 or Claim 10, wherein step e₂) comprises: a lithography followed by a wet or dry etching to partially eliminate layers D, a wet etching to hollow out plates A and A' while at the same time leaving a residue of said plates which covers layer B, and a dry etching to liberate the part of layer B in which are found one or several pores.

Claim 12 (Previously Presented): The method according to Claim 1, wherein layer B comprises a single stratum and in that said stratum is formed of a micro-machinable material different to that forming layer C.

Claim 13 (Previously Presented): The method according to Claim 1, wherein layer B comprises two strata and in that said strata are formed of two micro-machinable materials different to each other and different to that forming layer C.

Claim 14 (Previously Presented): The method according to Claim 1, wherein the micro-machinable materials forming plates A and A', layer B and layer C are selected from the group consisting of silicon, polycrystalline silicon, silica, silicon oxide and silicon nitride.

Claim 15 (Previously Presented): The method according to Claim 1, wherein it comprises, after step e), a step of functionalising the wall of the pore(s) (24) and/or the portions of the principal faces of the membrane which are not occupied by said wall.

Claim 16 (Previously Presented): The method according to Claim 15, wherein the functionalising step comprises a functionalisation of the wall of the pore(s) (24) and a functionalisation of the portions of the principal faces of the membrane which are not occupied by said wall, said functionalisations being different to each other.

Claim 17 (Withdrawn): A biomimetic membrane (10) with one or several through pores (24), comprising at least two different micro-machinable materials, one of which forms the wall (23) of said pore(s), whereas the other material(s) form the remainder of said membrane.

Claim 18 (Withdrawn): The biomimetic membrane (10) according to Claim 17, having a surface area of between around 1 μm^2 and 1 cm^2 .

Claim 19 (Withdrawn): The biomimetic membrane (10) according to claim 17 or claim 18, characterised in that it has a thickness of between around 5 nm and 5 μm .

Claim 20 (Withdrawn): The biomimetic membrane (10) according to Claim 17, having only one pore or a plurality of pores that may reach 100 million pores per mm^2 of surface area.

Claim 21 (Withdrawn): The biomimetic membrane (10) according to Claim 17, wherein the pore(s) (24) that it comprises are substantially cylindrical and have a diameter of between 5 and 500 nm.

Claim 22 (Withdrawn): The biomimetic membrane (10) according to Claim 17, wherein it is formed of two or three different micro-machinable materials.

Claim 23 (Withdrawn): The biomimetic membrane (10) according to Claim 17, wherein the materials forming it are selected from the group consisting of silicon, polycrystalline silicon, silica, silicon oxide and silicon nitride.

Claim 24 (Withdrawn): The biomimetic membrane (10) according to Claim 17, wherein it is integral with two chambers (26, 27) which are arranged on either side of said membrane, which have a base, a lateral wall and a wall opposite said base, and in which said base is formed of said membrane, whereas their wall opposite said base is provided with an opening (28, 29).

Claim 25 (Withdrawn): The biomimetic membrane (10) according to Claim 24, wherein the lateral wall of the chambers (26, 27) and the wall of said chambers that is opposite their base are formed of a micro-machinable material.

Claim 26 (Withdrawn): The biomimetic membrane (10) according to claim 25, characterised in that said micro-machinable material is chosen from among silicon, polycrystalline silicon, silica, silicon oxide and silicon nitride.

Claim 27 (Withdrawn): The biomimetic membrane (10) according to Claim 17, wherein the wall of the pore(s) bears chemical and/or biochemical functions different to those borne by the portions of its principal faces which are not occupied by said wall.

Claim 28 (Withdrawn): A method for using the biomimetic membrane (10) according to Claim 17, which comprises performing studies on the dynamic and functional properties of biological membranes.

Claim 29 (Withdrawn): A method for using the biomimetic membrane (10) according to Claim 17, which comprises:

manufacturing biocatalysis microsystems or detecting substances; or dosing of substances.

DISCUSSION OF AMENDMENT

Claim 1 has been amended to make explicit what was at least already implicit, i.e., that layer B is deposited directly on plate A, that layer C is deposited directly on layer B, and that layer C is completely removed from the underlying face of layer B. Other changes are grammatical in nature.

No new matter is believed to be added by the above-discussed amendment. With entry thereof, Claims 1-29 will remain pending; Claims 1-16 are active and Claims 17-29 stand withdrawn from consideration.